electrical characteristic of electrical energy of the power distribution system, and responsive to the monitoring, operating the appliance at an other mode of operation wherein the one of the loads consumes a second amount of electrical energy different than the first amount of electrical energy.

According to another aspect of the invention, an electrical energy consumption system comprises a power interface configured to receive electrical energy of the power distribution system, a plurality of loads coupled with the power interface and configured to consume the received electrical energy, and control circuitry configured to monitor an electrical characteristic of the electrical energy of the power distribution system and to vary an amount of consumption of the received electrical energy via one of the loads responsive to the monitoring.

Additional aspects are described herein. For example, additional aspects relate to compressor systems, HVAC systems, clothes dryers, clothes washers, water management systems, dish washers, personal computer systems (or other devices having energy saving modes of operation), water heaters, refrigerators, and any other appliance configuration configured to consume electrical energy during operation.

Referring to FIG. **1**, an electrical power distribution system **10** is shown arranged according to one exemplary illustrative embodiment. System **10** comprises any appropriate electrical energy delivery system configured to deliver residential, commercial, industrial, or other electrical energy from a supply to customers or consumers. The depicted exemplary system **10** comprises a system controller **11**, an electrical energy supply **12**, a distribution grid **14**, and an exemplary power management system **15** comprising a plurality of power management devices **16** and/or appliances **18**. A plurality of electrical appliances **18** are depicted coupled with the electrical power distribution system **10** and are configured to consume electrical energy provided from supply **12**. In some embodiments, appliances **18** may be considered to be a part of system **10** (e.g., in configurations wherein power management operations are implemented using associated control circuitry of the appliances as described in exemplary embodiments below).

System controller **11** is configured as control circuitry to monitor and manage operations of system **10** in some embodiments. System controller **11** may comprise a microprocessor in one embodiment to implement exemplary monitoring and control aspects of the power management operations described herein. System controller **11** may be referred to as a centralized controller in one embodiment and for example operated by supply **12** or at some location distant from consumers. In one arrangement, system controller **11** is configured to monitor electrical energy distributed within system **10** and issue appropriate control signals to power management devices **16** and/or appliances **18** (e.g., via networked, wired or wireless communications) to implement power management operations described herein. Implementation of power management operations by system controller **11** configured in the above-identified centralized embodiment may be referred to as centralized operations.

Implementation of power management operations at customer locations (e.g., residential, commercial, industrial, etc.) may be referred to as passive operations. For example, power management devices **16** and/or appliances **18** may implement some or all of the power management operations (e.g., monitoring, control) at the customer locations with or without a centralized system controller **11**. In other embodiments, system controller **11** may comprise a customer located device to provide passive operations (e.g., mounted locally to provide, monitor and/or control passive operations of devices **16** and/or appliances **18** at the customer location). Accordingly, in at least some exemplary embodiments, system controller **11** provides centralized or passive power management operations described herein. In some embodiments and as mentioned above, controller **11** may be omitted and power management operations may be implemented within devices **16** and/or appliances **18**.

Supply **12** is configured to provide electrical energy for consumption by appliances **18**. Supply **12** may be arranged as one or more generator or other construction configured to supply electrical energy. Generators may be individually taken on-line or off-line, or the output thereof may be adjusted, according to the usage of the electrical energy. In one exemplary implementation, supply **12** is arranged to provide alternating current electrical energy at a system frequency of 60 Hz. System frequency is the frequency of system voltage.

Distribution grid **14** operates to conduct the electrical energy from the supply **12** to appropriate destinations for consumption. In one embodiment, distribution grid **14** may comprise a plurality of different voltage distribution lines and transformers configured to conduct the electrical energy over substantial distances between distant geographical locations. Distribution grid **14** may provide electrical energy at exemplary voltages of 120/240 VAC (residential), 120/208 VAC (commercial), 277/480 VAC (industrial) or other appropriate voltages for usage by customer appliances **18** in one example.

Power management devices **16** are configured to selectively apply electrical energy from supply **12** to respective appliances **18** as described below. In the exemplary depicted implementation, all of the illustrated appliances **18** have associated power management devices **16**. In other configurations, only some of the appliances **18** may have associated power management devices **16**. In other arrangements, a given device **16** may be configured to control power management operations of a plurality of appliances **18**.

Power management operations may be implemented in variety of configurations. For example, in the centralized arrangement, system controller **11** comprises control circuitry configured to monitor electrical energy of system **10** and issue control signals to devices **16** and/or appliances **18** to control the application of electrical energy to appliances **18**. In passive arrangements, system controller **11** may be omitted, and adjustment of the supply of electrical energy may be implemented by individual devices **16** responsive to internal monitoring by devices **16** of electrical energy of system **10**. Some embodiments of system **11** may include centralized and passive power management operations. In the described exemplary embodiments, power management operations include monitoring of electrical energy from supply **12** and adjusting (e.g., reducing) an amount of electrical energy consumed by respective appliances.

In at least one embodiment, system controller **11**, power management devices **16**, and/or appliances **18** are configured to monitor at least one characteristic of the electrical energy provided from supply **12** and control a mode of operation of one or more associated appliance load coupled therewith. In one embodiment, system frequency of the electrical energy is monitored and the amount of electrical energy consumed by a respective appliance **18** may be adjusted responsive to the monitoring. For example, in one operational implementation, power management devices **16** may reduce an amount of electrical energy supplied to respective appliances **18** responsive to detection of a drop in system frequency of the electrical energy provided by supply **12**. Monitoring operations and control operations may be